ENGINEER'S REPORT
ON THE PROPOSED IMPROVEMENTS OF LOS COCHES CREEK AND BERRYESSA-LOS COCHES DIVERSION CHANNEL IN THE MILPITAS AREA OF ZONE E-1 OF THE SANTA CLARA COUNTY FLOOD CONTROL AND WATER CONSERVATION DISTRICT

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ENGINEER'S REPORT

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INTRODUCTION

Adequate flood control is a critical necessity to the development, prosperity, and economy of the Milpitas area. An intolerable situation exists when residential areas, orchards, highways, railroads, and other properties are subjected to and damaged by floods as in the winter of 1951-52.

The Milpitas area receives the run-off flow from an area encompassing over 15 square miles. The major channels that carry this flow are the Los Coches Creek and the Berryessa Creek. A few years ago a channel was constructed to divert the Berryessa and the Los Coches Creeks into one channel and to route the run-off from these waterways into Penitencia Creek. This diversion channel by-passes the City of Milpitas to the north. In the last few years the Milpitas area has developed rapidly and the existing Los Coches Creek and the Berryessa-Los Coches Diversion Channel must be improved in order to carry the anticipated increase of run-off.

The improvement of the Los Coches Creek and the Berryessa-Los Coches Diversion Channel will substantially reduce the severity of floods in the Milpitas area and will provide a major step toward the ultimate solution of the entire problem.

GENERAL LOCATION

The project as shown on the accompanying plans will provide (1) an improved drainage channel for the Los Coches Creek from a point approximately 600 feet east of Dempsey Road and 700 feet south of Calaveras Road to the Berryessa-Los Coches Diversion Channel, and (2) increase capacity for said Diversion Channel from the Los Coches

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confluence to the Penitencia confluence. The proposed channels will accommodate the storm run-off flow from a large drainage area which includes a number of streams draining the westerly slopes of the Los Buellis Hills and the adjacent alluvial plain.

PURPOSE

The purpose of this report is to describe in general the proposed project. Its scope is preliminary in nature and deals principally with the main phases of engineering planning. The accompanying general construction plans and specifications have been prepared to establish the economic feasibility of this project and to show the construction necessary to provide a more adequate outlet to Penitencia Creek.

GENERAL DESCRIPTION OF PROJECT

The most feasible solution of the flood control problem exclusive of local storm drainage interceptors will be:

1. Improvement and some realignment of existing channels.
2. Construction of a comprehensive system of major channels.

This project deals only with the improvement of the Los Coches Creek and the Berryessa-Los Coches Diversion Channel within limits indicated under "General Location."

Following a study of topography, rainfall, and run-off characteristics, a channel has been developed with the alignment and sections as shown on the accompanying plans. These improvements will conform with and become a part of the flood control system mentioned above. The proposed right-of-way widths as specified on the accompanying plans will accommodate designed channel sections capable of handling

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the anticipated design run-offs under conditions of ultimate development.

The proposed channel will begin in the existing Los Coches Creek, approximately 600 feet east of Dempsey Road and 700 feet south of Calaveras Road, and will follow a westerly course to its intersection with the Berryessa-Los Coches Diversion Channel. This portion of the work will improve the alignment of the existing creek and will provide for a concrete-lined channel to prevent scouring due to high velocities of flow. The above-proposed channel will have a capacity of 750 cubic feet per second.

The proposed improvement of the Berryessa-Los Coches Diversion Channel will begin where the above-mentioned improved Los Coches Creek enters the channel, and will follow a general northerly and westerly course to its confluence with Penitencia Creek. This portion of that improvement consists of widening the existing earth-lined channel and lining the bends in the channel with concrete. The above-proposed diversion channel will have a capacity of 1800 cubic feet per second.

The existing inadequate structures at Dempsey Road, Los Coches Creek intersection with the Diversion Channel, Calaveras Road, Hetch Hetchy water line crossing, Western Pacific Railroad, Oakland Highway, Southern Pacific Railroad, and other channel crossings shall be improved or replaced with adequate structures to carry the design capacities of the channel.

In addition to construction indicated on the plans the following items may be included if it is determined to be in the interest of the zone: Automatic drainage gates and appurtenances, rip-rap,

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fences, siphons, access rights-of-way for maintenance, and other items to be determined by the Engineer.

ESTIMATED COSTS

The estimated costs of the project will be $185,000* and will include construction costs, lands, rights-of-way, easements and properties to be taken, acquired or injured in carrying out said project; engineering, field work, construction staking, inspection, supervision, legal, clerical, advertising, printing, and contingent expenses.

METHOD OF FINANCING

This project is proposed to be financed by contributions by subdividers, as the funds become available. Other methods of financing, as determined by the Board of Supervisors, may also be employed to augment the subdividers' contribution funds. Under provisions of the Santa Clara County Flood Control and Water Conservation District Act the Board of Supervisors, if the need arises, may levy taxes or assessments upon the properties in the zone to pay construction costs and expenses.

GENERAL SPECIFICATIONS

General specifications for all excavation, compacted levees, structures, appurtenances, and miscellaneous construction shall be according to the accompanying specifications, applicable County Standards, and pertinent provisions of the Standard Specifications

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*This amount will be reduced by approximately $40,000 if the State constructs the Oakland Road structure.

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of the State of California, Department of Public Works, Division of Highways.

LANDS, RIGHTS OF WAY, AND EASEMENTS

Lands, rights-of-way, and easements will be required to provide for channels, levees, and access, and will be of the widths and at the locations as shown on the plans. A 40-foot right-of-way will be required for the improvement of Los Coches Creek from the beginning of the project to its intersection with the Berryessa-Los Coches Diversion Channel. From this intersection to Calaveras Road the existing 70-foot right of way shall be widened to 100 feet. That section of the existing 80-foot right-of-way for the diversion channel from Calaveras Road to the Oakland Highway shall be widened to 100 & 110 feet. That portion of the existing 60-foot right-of-way for the diversion channel from Oakland Highway to Penitencia Creek shall be widened to 100 feet.

RELOCATION OF STRUCTURES AND UTILITIES

Certain underground utilities such as sanitary sewers, gas mains, water mains, telephone ducts, etc., will have to be raised, lowered, or relocated where such utilities conflict with the proposed channel.

FINANCIAL CONSIDERATIONS

If the rapid industrial, commercial, and residential development of the Milpitas area can be enhanced by adequate flood control work, the assessed valuation in this area will increase substantially in ensuing years. This increase will directly benefit the East Zone because it will provide a broader tax base for the entire

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area to finance subsequent needed projects.

CONCLUSION

The project outlined in this report will provide a vitally needed outlet for flood waters of the Berryessa and Los Coches Creek watersheds and become an integral part of a comprehensive system of major channels ultimately required in the East Zone.

Design criteria have been based upon ultimate development of the area. However, because the area is now only partially developed the amount of funds available is limited. Various sections of the proposed channel improvements could be constructed by separate contracts, depending upon the need in certain areas. When all the channel sections are constructed, they would relieve the flood hazard and provide an adequate waterway from this area to Penitencia Creek.

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GENERAL SPECIFICATIONS

FOR THE IMPROVEMENT OF A STORM WATER DRAINAGE CHANNEL AND APPURTENANCES FOR LOS COCHES CREEK AND BERRYESSA-LOS COCHES DIVERSION CHANNEL FROM THE EXISTING LOS COCHES CREEK, APPROXIMATELY 600 FEET EAST OF DEMPSEY ROAD AND 700 FEET SOUTH OF CALAVERAS ROAD TO THE DIVERSION CHANNEL AND THENCE TO ITS CONFLUENCE WITH PENITENCIA CREEK, IN THE MILPITAS AREA OF ZONE E-1 OF THE SANTA CLARA COUNTY FLOOD CONTROL AND WATER CONSERVATION DISTRICT.

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GENERAL

The work to be done under these plans and specifications consists of improving a Storm Water Drainage Channel and Appurtenances in Zone E-1 of the East Flood Control Zone in Santa Clara County Flood Control and Water Conservation District. Construction is to conform to location, dimensions and type shown upon accompanying plans. The construction of channel, culverts, bridges and incidental work in connection therewith is to be performed in such a manner as to make a complete project.

SPECIFICATIONS

The work shall be accomplished in accordance with appropriate provisions of construction details, Section 10 to Section 60, inclusive, of the specifications entitled "State of California Department of Public Works, Division of Highways, Standard Specifications, August 1954," inasmuch as they apply. Said specifications are herein referred to as the Standard Specifications, and are hereby made a part of these specifications. In the event of conflict between the Standard Specifications and the special provisions of these specifications, the latter shall apply.

CHANNEL EXCAVATION

Channel excavation shall be made as shown on the plans or as directed by the engineer true to line, grade and cross-section. Excavated material shall be used for levee construction. All excess material shall be disposed of off the limits of work at the direction of the engineer in charge as explained under the heading of

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Waste Excavation of these specifications.

No debris, exposed tree roots or unstable ground will be permitted in the final channel section.

Care must be exercised to prevent excavation below grade, and areas excavated below grade shall be filled with suitable material and thoroughly compacted by the Contractor at his own expense. The finished channel shall be bladed on the sides and bottom to a smooth surface and even grade.

LEVEE EMBANKMENT

Levee construction shall be as shown on the plans or as directed by the Engineer true to line, grade and cross-section.

The levees of excavated material shall be placed in layers not exceeding eight inches (8") in loose thickness and compacted to a relative compaction of at least 90% by means of a sheep's foot roller or other approved methods. This compaction test shall be made by the impact or field method as specified in Section 6, Article (21) of the Standard Specifications.

No roots, trash or other extraneous material will be allowed to remain in the levee. The natural ground under the levees shall be bladed to remove all weeds and organic material.

At the time of compaction, the levee material must contain optimum moisture to obtain 90% relative compaction. Watering of levee material, if deemed necessary by the Engineer, shall not constitute an extra, but shall be included in the contract price per cubic yard for levee embankment, and no additional allowance will be made therefor.

no Provision in specs for [illegible]
of unsuitable material

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WASTE EXCAVATION

All excavated material in excess of the amount required for levee construction and filling of relocated portions of the old channel shall be disposed of off the right-of-way at the direction of the Engineer.

FILLING PORTIONS OF ABANDONED CREEK

Portions of the existing creek channel abandoned because of realignment shall be filled, where required, to a level equal with the average surrounding ground and compacted in layers with the construction equipment as directed by the Engineer. All excess [illegible] from construction [illegible] shall be [illegible] filled, at the direction of the Engineer, to compensate for future settlement and shrinkage,

STRUCTURAL EXCAVATION AND BACKFILL

Structural excavation and backfill shall conform to the provisions of Chapter III, Section 13, of the Standard Specifications and these special provisions. Trenches are to be shored according to the provisions of the State of California, Department of Industrial Relations, Division of Industrial Safety, Bulletin Number 105 of December, 1949.

When it is necessary to excavate within the limits of existing asphaltic concrete, oil macadam or plant mix pavement, the pavement shall be cut before the trenching operation is begun. The pavement shall be cut and removed at least five inches (5") outside each side line of the trench to permit proper keying of the restored pavement.

When excavating within a roadway, one traffic lane each way shall be kept open and in safe condition at all times unless permis-

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sion to close the road has been granted in writing by the County Traffic Engineer. Whenever the Contractor's operations create conditions hazardous to traffic or to the public, the Contractor shall take the necessary precautions and provide adequate means to protect those who must pass over or through the work.

Backfill shall be placed in horizontal layers not exceeding six inches (6") in depth before compaction and compacted to a relative compaction of not less than 90% as determined by the impact field method as specified in Section 6, Article (21) of the Standard Specifications. This compaction shall be made by mechanical tampers up to and including twelve inches (12") above the top of the structure. The portion from twelve inches (12") above the top of the structure to the finished grade may be compacted by mechanical tampers, sheep's foot roller or other approved methods. Jetting may be used where permitted by the Engineer.

The final twelve inches (12") of backfill shall be imported base material of quality satisfactory to County Engineer.

Excavated material in excess of that amount required for backfilling shall be disposed of off the limits of work as directed by the Engineer.

STRUCTURAL CONCRETE

Culverts, wingwalls, drop structures and bridges shall be constructed of reinforced concrete where shown on the plans and shall conform to the provisions of Sections 26, 27 and 28 of the Standard Specifications insofar as they may apply.

Suitable passage-way for two-way traffic through the construc-

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tion zone shall be provided at all times. The Contractor shall build a temporary bridge of sufficient strength and width to accommodate the traffic or provide a detour satisfactory to the Engineer. Suitable barricades and lights shall be provided at all times. It shall be the responsibility of the Contractor to make all arrangements with the property owners, remove the detours after completion of the structure, and restore the area to a condition satisfactory to the owners.

All concrete shall be Class "A" containing six (6) sacks of approved Portland Cement per cubic yard. The maximum size of the aggregate shall be one and one-half inches (1½"). The mix shall be as directed by the County Engineer. The slump shall not exceed four inches (4"). Concrete shall not be permitted to fall from a height greater than six feet (6'). Internal compressed air vibrators shall be used to consolidate the concrete and not less than two vibrators in good working order shall be available during any pour.

All concrete shall be kept continuously moist for a period of seven days after pouring. All supporting falsework shall remain in place for a period of 21 days after the pour.

The finish shall be semirough accomplished by means of a bull float or other approved methods.

Reinforcement shall be intermediate grade billet-steel bars and shall conform and be placed in accordance with Section 28 of the Standard Specifications.

CONCRETE CHANNEL LINING

Those portions of the channel to be lined with reinforced

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concrete are shown on the plans. The lining shall be three inches (3") of Class "A" Portland Cement concrete containing six (6) sacks of cement per cubic yard. Maximum size of aggregate shall be three-quarters inch (3/4") and the mix must be approved by the Engineer. Gunite shall be optional.

The concrete shall be kept continuously moist for a period of seven (7) days. The Contractor may use a pigmented seal compound for curing if desired.

Wire mesh is to be used for reinforcement in the concrete lining and shall conform and be placed in accordance with Section 28 of the Standard Specifications.

RAILROAD TRESTLES

Timber railroad trestles shall be constructed in the proper location and in accordance with common railroad practice or as directed by the Engineer. Materials and construction shall conform to Sections 34 and 35 of the Standard Specifications insofar as they may apply.

TIMBER BRIDGES

The existing timber bridges shall be lengthened at the proper locations and in accordance with the plans. The work shall conform to the provisions of Section 35 of the Standard Specifications insofar as they may apply.

All timber shall be structural grade Douglas Fir. Grading shall be in accordance with Section 35 of the Standard Specifications. All timber pieces located within two feet (2') of ground

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contact shall be pressure treated with cuprolignum (or equal) in accordance with Section 34 of the Standard Specifications.

CORRUGATED METAL PIPE

Corrugated metal pipe shall be installed in the proper locations if required by the plans or as directed by the Engineer.

Corrugated metal pipe shall conform to Section 47 of the Standard Specifications and shall be asphalt dipped copper iron.

RIPRAP

Stone or broken concrete riprap shall be hand placed in the proper locations as required by the plans or as directed by the Engineer.

The ground under the riprap shall be excavated to the correct depth to permit the surface of the riprap to be flush with the sides and bottom of the finished channel.

FENCES

Fences shall be constructed in the proper locations as required by the plans. Materials and construction shall conform to the provisions of Section 44 of the Standard Specifications insofar as they may apply.

PRIVATE UTILITIES

It is the responsibility of the Contractor to ascertain the exact location of the private utilities in the construction zone, to notify all affected parties in advance of any temporary suspen-

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sion of service and to relocate such services as shown on the plans or as directed by the Engineer. The interruption of service shall be of minimum duration and at a time which is reasonable and convenient for the users of the particular utility.

Materials and installations shall be as shown on the plans or as directed by the Engineer.

PUBLIC UTILITIES

It is the responsibility of the Contractor to ascertain the location of all public utilities in the construction zone and to notify all owners so that said owners will have ample time to make alterations and adjustments in the facilities well in advance of proposed construction. Location of utilities when shown on the plans is approximate only.

IMPORTED BASE MATERIAL

Imported base material shall conform to and be installed in accordance with the provisions of Section 16 of the Standard Specifications.

RESTORATION OF PAVEMENT

Where it is necessary to remove existing pavement, said pavement shall be restored to original condition as to line, grade, type and depth as existed prior to excavation. All armor coat pavement restoration shall be a "Class B" Double Seal Coat according to Standard Specifications. Oil macadam and asphaltic concrete pavement shall be replaced with three inches (3") of 85-100 penetration

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hot plant mix surfacing, placed in two lifts and when rolling has been completed, shall be sealed with asphaltic emulsion seal coat. Where the top of the culvert is approximately six inches (6") or less below the finished paved surface, the entire fill shall be made of hot plant mix surfacing.

CLEARING AND GRUBBING

The entire area within the right-of-way where specified shall be cleared and grubbed in accordance with Section 11 of the Standard Specifications. All exposed tree roots near the surface of the ground shall be removed. Trees, roots and all other cleared material shall be disposed of off the right-of-way. Cut Exclusion clause on [illegible]

FINAL CLEANING UP

Final cleaning up shall be done in accordance with Section 4, paragraph (b) of the Standard Specifications. It shall include grading all levees to a uniform width and side slope as shown on the plans or as directed by the Engineer. Cut exclusion clause

MISCELLANEOUS

The Contractor shall protect adjacent property owners from any damage to property and dust nuisance arising from his operations. A water wagon shall be kept on the job at all times.

The Contractor shall cause to be remedied, within thirty (30) days after written notice to do so by the County Engineer, any non-compliance with the provisions herein. Failure upon the part of

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the Contractor to conform to said request by the County Engineer within said 30-day period shall be deemed an authorization to the Santa Clara County Flood Control and Water Conservation District to proceed to correct the deficiency, and the District shall be reimbursed by the Contractor for the necessary expenses incurred by the Santa Clara County Flood Control and Water Conservation District in the correction of said deficiency.

TRESPASSING

The Contractor shall restrict his operations to areas within Santa Clara County Flood Control District rights-of-way. He shall caution all employees not to trespass or operate equipment outside the aforementioned rights-of-way without first obtaining written permission from adjacent property owners. A copy of said written permission is to be filed in the office of the County Engineer.

LEGAL RESPONSIBILITY

The Contractor shall indemnify and save harmless the County of Santa Clara, and the Santa Clara County Flood Control and Water Conservation District, its officers and employees from any suits, claims or actions brought by any person or persons for or on account of any injuries or damages sustained or arising out of the construction of the work hereinabove described or in consequence thereof.

The formal award of a contract to the contractor for the construction of the work hereinabove described shall constitute acceptance of the terms and conditions of this consent without formal acceptance thereof by the contractor.

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End of Project
J
Realigned Penitencia Creek, 80' R.O.W.
Timber Bridges to be lengthened
15'
25'
Proposed 100' R.O.W.
Existing 60' R.O.W.
Weller W. Curtner
Weller W. Curtner
S = 0.0012
Existing S.P.R.R. Timber Trestle to be lengthened
I
H
Weller W. Curtner
Existing Highway Culverts to be replaced
RAILROAD
HIGHWAY
RAILROAD
PACIFIC
WESTERN
PACIFIC
SOUTHERN
OAKLAND
P.G.&E. TOWER LINE
S = 0.0016
G
Existing Concrete Lining to be removed & replaced as required.
S = 0.0018
Existing Berryessa Los Coches Diversion Channel
Existing W.P.R.R. C.M.P. Arch Culverts to be replaced with a Timber Trestle
Standard Realty & Development Co.
Ford Plant Storm Outfall (Former Los Coches Channel)
Ford Plant Storm Outfall Levees from Calaveras Road to Berryessa Los Coches Diversion Channel to be raised to conform with elevation of Diversion Channel Levees
Proposed 100' R.O.W.
Existing 80' R.O.W.
Existing Concrete Lining to be removed & replaced as required
Standard Realty & Development Co.
F
S = 0.0018
DEPARTMENT
WATER
FRANCISCO
SAN
Existing Hetch-Hetchy R.C. Drop-Structure to be widened
S = 0.0028
Existing Concrete Lining to be removed & replaced as required
E'
Proposed 110' R.O.W.
Existing 80' R.O.W.
Existing R.C. Box Culverts to be increased in capacity
CALAVERAS
ROAD
E
Proposed 100' R.O.W.
Existing 70' R.O.W.
S = 0.0025
Concrete lined intersection to be constructed at junction of canals
D
S = 0.0092
Standard Realty & Development Co.
Abandoned Creek & Drop Structure to be backfilled
Proposed Future 80' R.O.W.
Existing 70' R.O.W.
Proposed 40' R.O.W.
Existing Los Coches Creek
Standard Realty & Development Co.
Existing R.C. Box Culvert to be improved
DEMPSEY ROAD
Joseph R. Whalen
Antone & Rose Pimental
Arlington Investment Co.
MILFORD VILLAGE
Existing 30' R.O.W.
This portion of Channel Improvements to be done by others
C
S = 0.0092
B
S = 0.0158
A
Beginning of Project
N
ALAMEDA COUNTY
PROJECT LOCATION
ALVISO
PALO ALTO
MILPITAS
MOUNTAIN VIEW
SUNNYVALE
LOS ALTOS
SANTA CLARA
SAN JOSE
CUPERTINO
CAMPBELL
LOS GATOS
SAN MATEO COUNTY
ZONE E-1
SANTA CLARA COUNTY
STANISLAUS COUNTY
MORGAN HILL
GILROY
SANTA CRUZ COUNTY
MERCED COUNTY
SAN BENITO COUNTY
5 3 1 0 5 10 15 MILES
Prop. Channel
Proposed 40' ROW
Proposed ROW
16'
24'
2.50
4
6.50'
6'
6.50'
12'
2.50'
Exist. Gr.
Water Level
4.50'
6.50'
1:1
Levee Embankment
Channel Excavation
Reinforced Concrete Lining
Proposed 100' ROW (D) to (E) (110' (E) to (E'))
Existing 70' ROW (D) to (E) (80' (E) to (E'))
Exist. ROW
30'
12'
9.75'
25'
25
9.75'
12'
14'
Exist. Gr.
1½:1
6.50'
Exist. ROW
Prop. Channel
1½:1
Exist. Gr.
Section (E') to (F) is same as Section (E) to (E'), except channel widening is on other side of Existing Channel.
Proposed 100' ROW
Existing 80' ROW
20'
4.75'
12'
11.25'
20'
20'
11.25'
12'
8.75'
12'
Exist. ROW
Exist. Gr.
Prop. Channel
Exist. ROW
7.50'
1½:1
1:1
Exist. Gr.
Proposed 100' ROW
Existing 60' ROW
15'
25'
5'
12'
12'
20'
20'
12'
12'
7'
4'
Exist. ROW
8'
Exist. Gr.
1½:1
1:1

INDEX MAP

TYPICAL SECTION (B) TO (D)
Scale: 1" = 10'

TYPICAL SECTION (D) TO (F)
Scale: 1" = 10'

TYPICAL SECTION (F) TO (H)
Scale: 1" = 10'

TYPICAL SECTION (H) TO (J)
Scale: 1" = 10'

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SANTA CLARA COUNTY FLOOD CONTROL DISTRICT, CALIFORNIA, ZONE E-I

MAP & GENERAL CONSTRUCTION PLANS FOR THE IMPROVEMENT OF LOS COCHES CREEK AND BERRYESSA LOS COCHES DIVERSION CHANNEL

PROJECT ENGINEER
MARK THOMAS & CO.

DESIGNED BY JEF
DRAWN BY JEF
CHECKED BY A.P.S.

OFFICE JOB NO. 55249
MAP NO.
FIELD BK. NO.

APPROVED BY Aldo [illegible] Davis
R.C.E. NO. 5691

DATES: PRELIM. Dec 1, 1955
FINAL Dec. 1, 1955

SCALE: 1" = 300'

DISTRICT ENGINEER
PRELIM. APPROVAL: George H. Prime
GEORGE H. PRIME., SR. ENG., FLOOD CONTROL DISTRICT
FINAL APPROVAL: Leonard Bushnell
LEONARD BUSHNELL, COUNTY ENGINEER

ZONE E-I (EAST ZONE)
PROJECT NO. E-I-3

ENGINEER JOB NO. FC-175

ONE SHEET